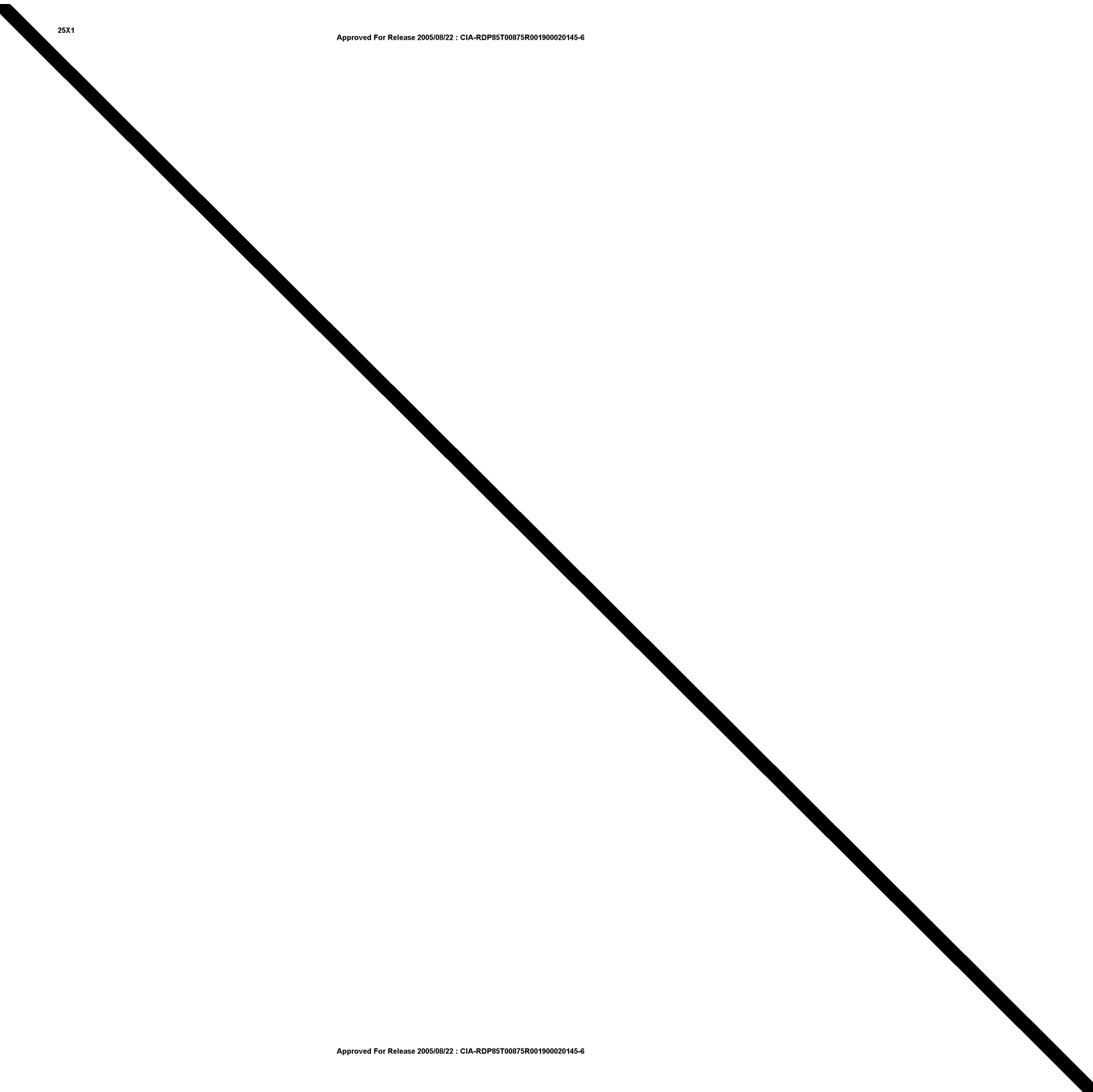

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12 June 1974

MEMORANDUM FOR THE RECORD

SE/P/C

SUBJECT: S-6237 - Effects of an International Agreement to Prepare for Oil Crises

The attached paper was delivered to Stephan Bosworth for Thomas Enders on 11 June 1974.

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EFFECTS OF AN INTERNATIONAL AGREEMENT TO PREPARE FOR OIL CRISES

Prepared For

The International Energy Review Group

CIA/OER

11 June 1974

Approved For Release 2005/08/22 : CIA-RDP85T00875R001900020145-6

Introduction

1. To mitigate damages from future embargoes, each major oil importing country could now agree to:

-- maintain enough oil stocks or other standby capacity to replace 100 days of its normal imports;

-- reduce its oil consumption by 10% during an embargo; and

-- share oil supplies available during a crisis, according to the apportionment plan stated in this memorandum's annex.

2. Under this combined agreement, each partner country would fare differently in alternative crises. In this note we examine the agreement's effects on each partner's oil imports.

The Agreement's Impact on Imports

3. The U.S., Western Europe, and Japan now jointly import about 27 million barrels of oil per day (mb/d). Alternative embargoes would reduce this total, as shown in Table 1.

4. Under the postulated apportionment scheme, each partner's share of available imports depends only on the agreed percentage of demand restraint, and not on the agreed level of stocks. Thus if we assume a demand restraint of 5%, we can plot each partner's allowed imports against the total imports available to the partners, as in Figure 1. By varying the demand restraint to 10% and 15%, we obtain different plots, as in Figures 2 and 3.

5. As the demand restraint increases, the US share of imports decreases. Moreover, under a 15% demand restraint and a very severe crisis, the US imports are negative, which implies an agreement to export domestic production.

6. With a demand restraint of 10%, the U.S. takes a larger percentage cut in imports than either Western Europe or Japan (see Figure 4). Higher levels of restraint increase this difference.

Demand Restraints on Energy versus Oil

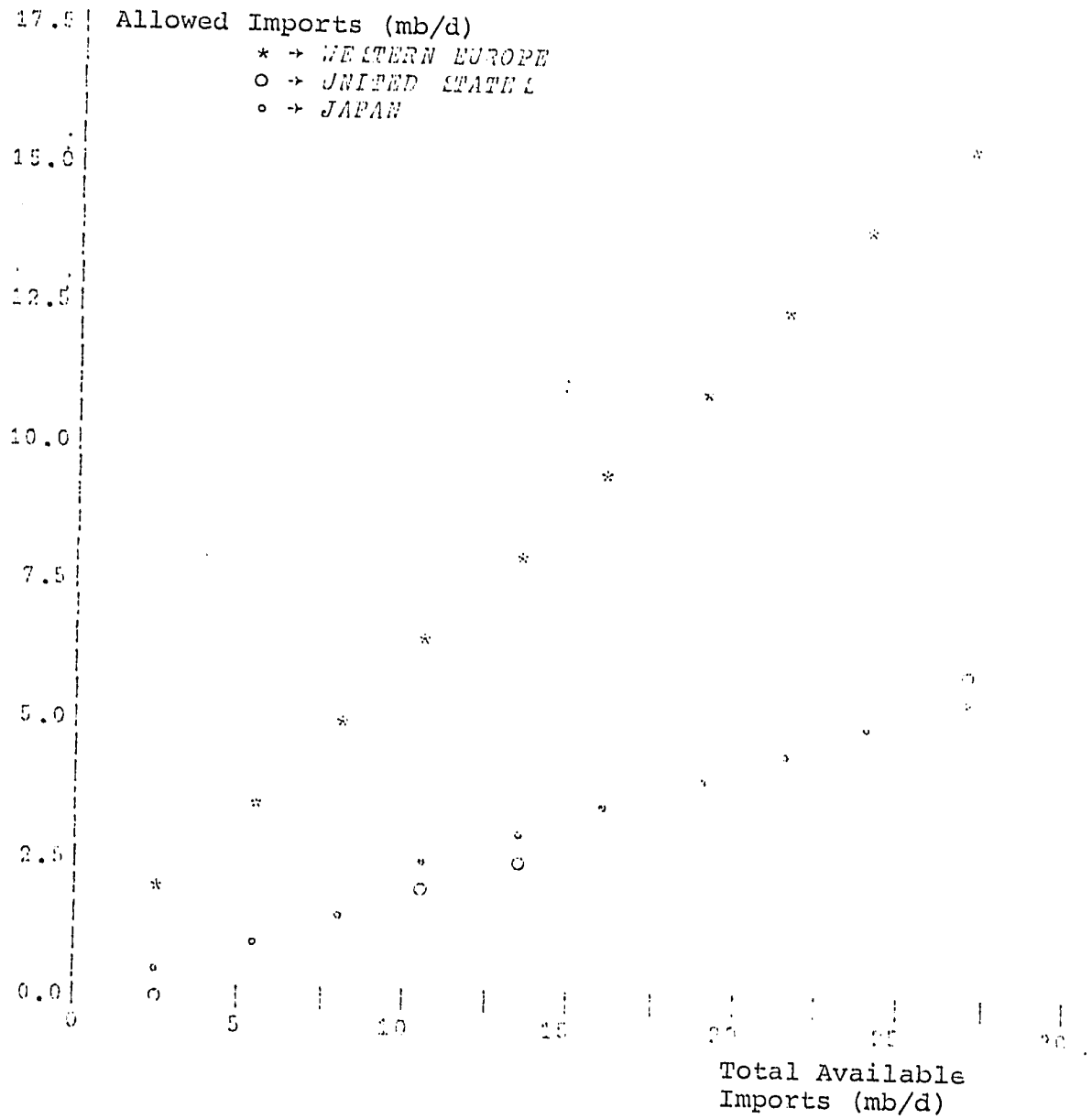
7. A variant of the apportionment plan specifies an agreement by each partner to restrain total energy consumption--rather than oil consumption--by a certain percentage. In particular, a restraint of 5% of total energy consumption now implies oil consumption restraints for the US, Western Europe, and Japan of about 10%, 8%, and 6% respectively.

8. This emphasis on energy rather than oil disadvantages the US. In comparison with a 5% oil restraint, a 5% energy restraint would have cost the US over 600,000 b/d in imports during the most recent embargo, had the apportionment plan been operative.

Table 1

Crises	Level of Imports Available to the U.S., Western Europe, and Japan During Crises (mb/d)
OAPEC Embargo Against U.S.	25.21
OAPEC Embargo Against U.S., West Germany, Netherlands	22.26
50% OAPEC Embargo	19.10
100% OAPEC Minus Saudi Arabia Embargo	18.05
50% OPEC Embargo	13.95
100% OAPEC Embargo	12.20
100% OPEC Minus Iran Embargo	4.28

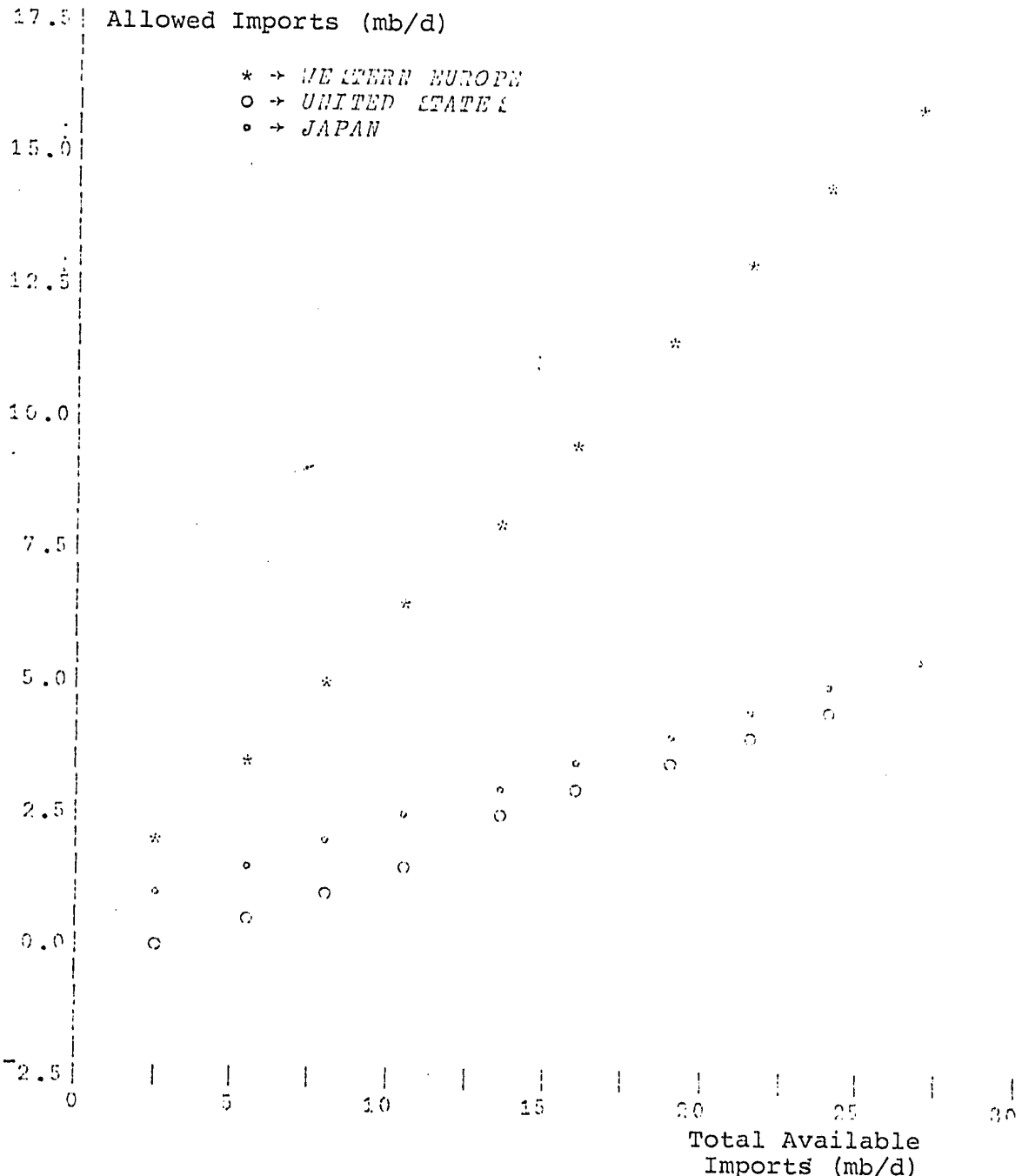
Figure 1
Shares of Available Imports
(5% Demand Restraint)



Note: In some cases, the US and Japanese shares coincide on the graph.

Figure 2

Shares of Available Imports
(10% Demand Restraint)



NOTE: In some cases the US and Japanese shares coincide on the graph.

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Figure 3
Shares of Available Imports
(15% Demand Restraints)

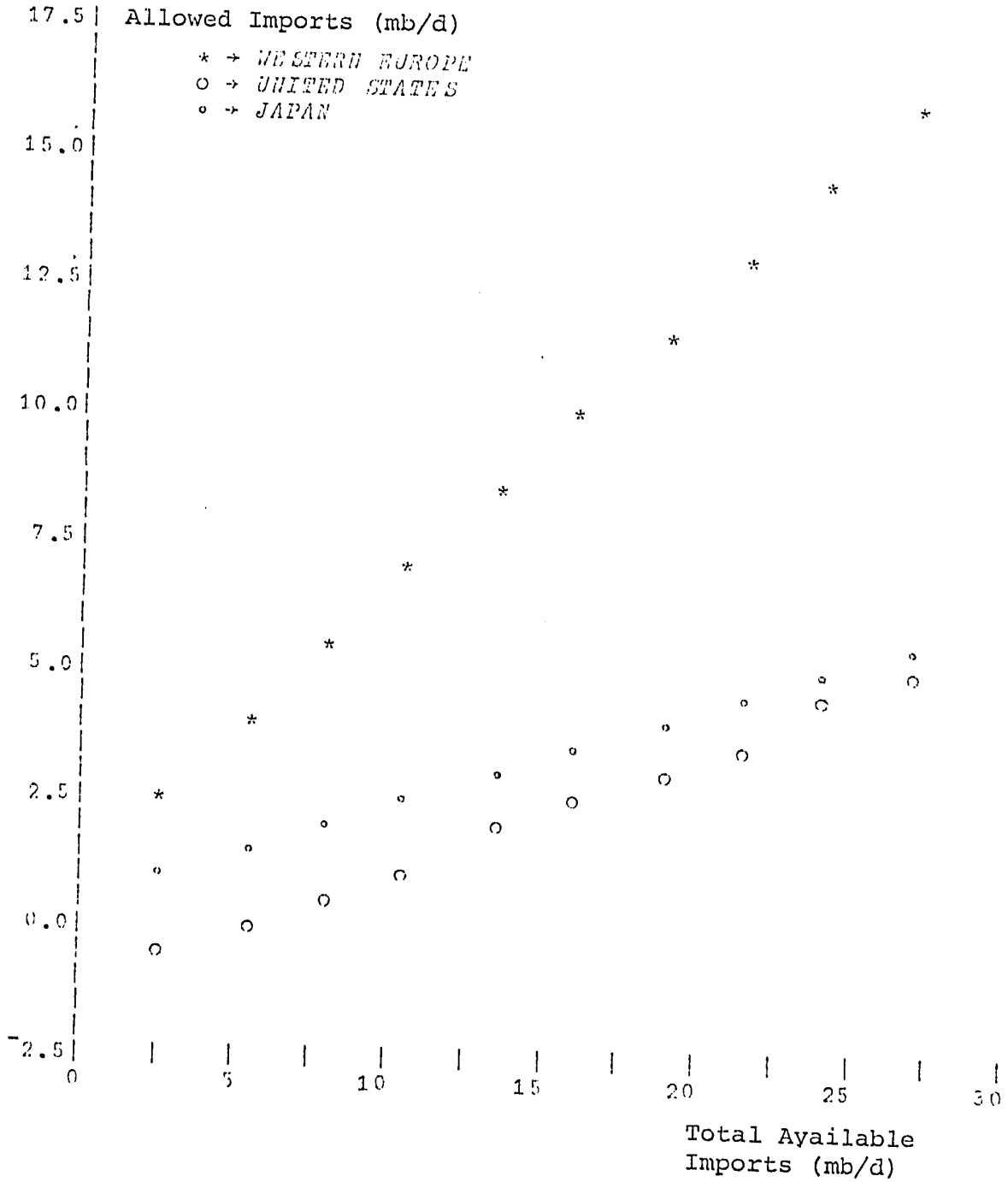
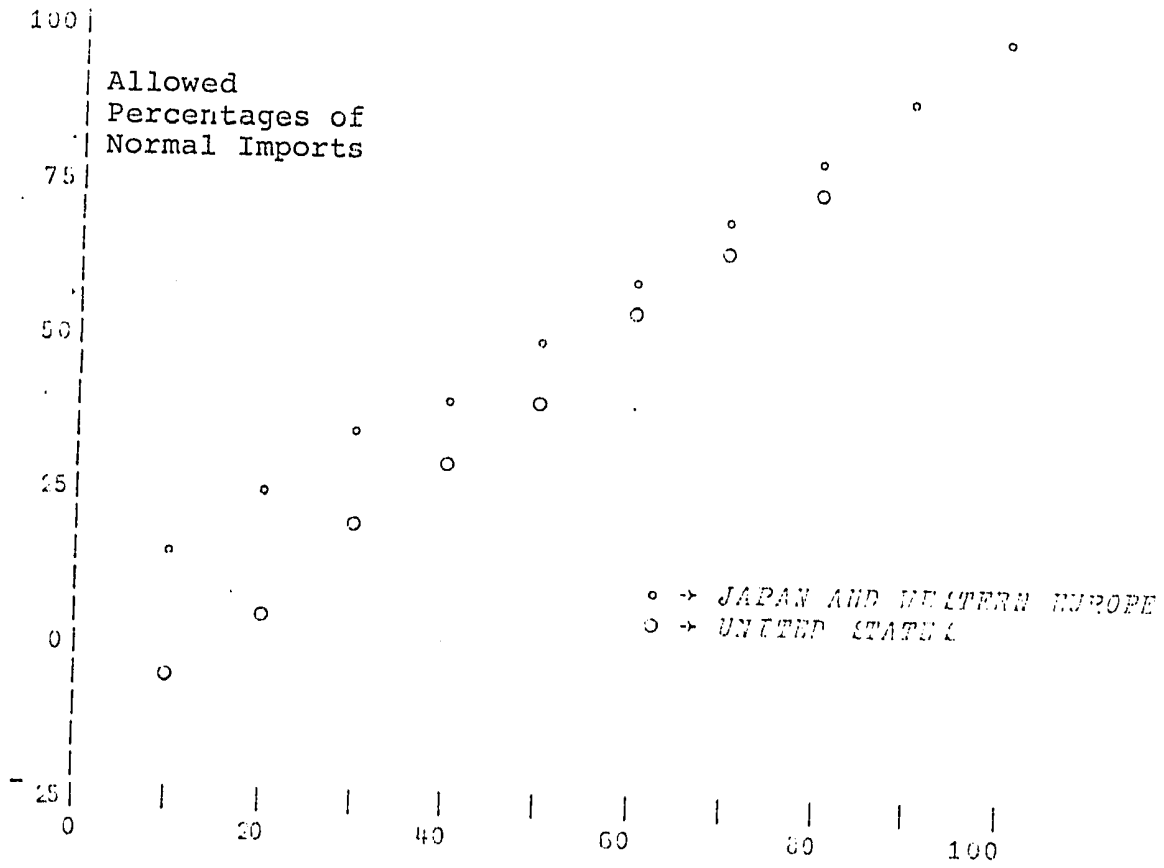


Figure 4

Allowed Percentages of Normal Imports
(10% Demand Restraint)



Annex

A Formula for International Allocation of Oil Supplies

1. By agreeing to a common percentage of demand restraint during oil embargoes, the US, Western Europe, and Japan thereby agree to permissible levels of oil consumption in crises. One principle of oil sharing asserts that if all partner countries maintain the oil stocks they agreed to, then the oil available in a crisis should be shared so that each partner would deplete his stocks over the same time period, in his attempt to maintain his permissible level of consumption.

2. To develop a sharing formula that embodies this principle, we first define r as the agreed percentage of demand restraint, C as the partners' combined oil consumption per day immediately before a crisis, P as the partners' combined domestic production per day, and I as the imports available to the partners during the crisis. Then the partners' combined supply shortfall S becomes

$$S = (1-r)\,C - P - I.$$

This means that the supply shortfall is the partners' permissible level of consumption minus their daily rate of available supplies.

3. We next define t_j as the agreed level of stocks for the jth partner, and T as the total level of stocks for all partners. The jth partner's stock drawdown obligation is specified as d_j, where

$$d_j = (t_j/T)\,S.$$

Thus the partners' total shortfall in supplies is allocated among the partners in proportion to agreed stocks.

4. Finally, we define c_j as the jth partner's normal daily oil consumption before the crisis, and p_j as the partner's domestic oil production. The imports the partner needs to maintain his permissible level of consumption are n_j, where

$$n_j = (1-r)\,c_j - p_j.$$

The imports that the partner actually gets during the crisis are then i_j, where

$$i_j = n_j - d_j.$$

This says that a partner's allowed imports equals his required imports minus his drawdown obligation.